

# Investigation of Trans-membrane Fouling during Membrane Distillation Processes

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## Abstract:

Membrane failure is the key factor limiting the industrial application of membrane distillation technique. A typical and important inducement of membrane failure is trans-membrane fouling. Trans-membrane fouling is affected by the membrane parameters, operation parameters, and the parameters of the feed solution. In this work, the trans-membrane fouling under different operating conditions and membrane parameters was discussed by using static evaporation on the membrane and membrane distillation tests. Through the characterization of crystallization fouling inside the pores under various conditions, the mechanism of crystallization fouling growth along the membrane pores is systematically summarized. The crystallization fouling cleaning inside the porous membrane and membrane re-functionalization performance is reported, which provides a reference for the potential application of the membrane distillation process.

**Keywords:** membrane failure; crystallization fouling; membrane re-functionalization; membrane distillation